

REMARKS

This is a further response to the final Office Action mailed on August 4, 2008 and the Advisory Action mailed on October 23, 2008 in the above-identified matter.

Claims 1, 6 and 11 are amended, and claims 13-21 are new. No new matter is entered. Example support for the claims is as follows: claim 1 (p. 1, line 27 to p. 2, line 2), claim 6 (p.6, lines 3-15), claim 11 (specification, p.3-4, bridging paragraph), claim 13 (Fig. 4, optoelectronic port 26, p.5, line 22, optical receivers or photodiodes P, optical fibers 45, 46), claim 14 (antenna selector can be at controller 40, Fig. 4, in one approach), claim 15 (transmit antenna 42, Fig. 4, O/E converter is shown adjacent to antenna 42 for converting optical signal to RF signal, optical transmitter or laser L at optoelectronic port 26), claim 16 (p.5, lines 26-28), claim 17 (central site 10, controllers 33, switch system 12, receiving switching components 30, 31, Fig. 3), claims 18-20 (p.5, lines 3-14, Fig. 3) and claim 21 (Fig. 4, p.4, lines 26-28).

Paragraph 5 of the Office Action

Regarding paragraph 5 of the Office Action, claims 1-3 and 6-12 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Laborde (5,303,287) in view of Hashikuki (6,141,392). Applicants respectfully traverse the rejections.

Claim 1 sets forth, in part, a communications network which includes a cell selector that uses a macro-diversity technique to counter macro spatial effects in a communications network, where the cell selector selects a cell site from two or more cell sites for reception from a particular wireless terminal, where at least one of the cell sites has multiple receive antennas, and an antenna selector that uses a micro-diversity technique to counter micro spatial effects in a communications network, where the antenna selector selects one of the receive antennas of the multiple receive antennas of the selected cell site. Thus, a diversity technique is employed both within a cell site and between different cell sites. Laborde provides a system which integrates a personal communications network (PCN) and a digital cellular network (DCN). Laborde states (col. 9, lines 4-22):

For upstream transmission, space diversity is the standard technique in cellular for overcoming multipath. In cellular, space diversity is employed at the base station by using two receive antennas (micro-diversity) separated by a few wavelengths, which is sufficient to decorrelate multipath in the inbound direction and provide approximately 6 dB of gain under Rayleigh fading conditioned. *The same micro-*

diversity technique could be used at the radio ports 34 of the PCN, although the complexity of the radio port and distribution network design would increase.

A multisite diversity scheme can also be employed in which the reception of the same remote transmission at adjacent microcells 18 is used. In addition to having a higher gain potential than micro-diversity, multisite diversity permits a more simplified implementation of the radio ports 34 and distribution network 40 by eliminating the need for an additional receive antenna and FDM channel per radio port.

Laborde also describes the use of a multi-site diversity controller 68, also referred to as a macro-diversity controller (Fig. 5, col. 9, lines 48-51, col. 10, lines 4-9). Thus, Laborde teaches that multi-site (or macro-) diversity can be used *instead of* micro-diversity to achieve a higher gain potential and avoid complexity. Laborde teaches away from Applicants' invention by citing advantages which are achieved by only using multi-site (or macro-) diversity. There is simply no disclosure or suggestion that multi-site (or macro-) diversity can be combined with micro-diversity as set forth in Applicants' claims.

Hashikuki provides a diversity receiver in a radio data communication system. A transmitter 10 communicates with a diversity receiver 20 having antennas 21 and 22 using spread spectrum modulation in a multipath environment (col. 2, lines 10-15, Fig. 1a). The Office Action asserts at p. 4, lines 2-5 that:

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify LABORDE to include the teachings of HASHIKUKI, since the use of selecting one of a multiple of antennas can be used to select a receive antenna with the best characteristics for signal reception.

However, as discussed above, Laborde stated that multi-site (macro-) diversity provided a higher gain potential than micro-diversity and permitted a more simplified implementation. Accordingly, any suggestion that multi-site (macro-) diversity should be used with micro-diversity as claimed could only be made impermissibly with hindsight gained from Applicants' invention. Further, Hashikuki's spread spectrum receiver is incompatible with Laborde's frequency division multiplexing (FDM) approach (col. 9, lines 48-51). Accordingly, a person of ordinary skill in the art would not be led to try the proposed combination by the references themselves or by generally available knowledge.

Further, the cited references do not acknowledge a problem which Applicants' invention addresses. For example, as noted in Applicants' specification (col. 1, line 27 to col. 2, line 2):

Macro diversity counters large scale and generally static spatial variations between the receiving antennae such as shadowing. Micro diversity counters relatively small scale and often time varying effects such as multipath fading. Both macro and micro spatial effects can be important in wireless LANs with distributed access points.

The cited references do not recognize the importance of countering both macro and micro spatial effects as explained by Applicants. In view of the above, it is clear that Applicants' invention provides a communication network which is not obvious in view of the cited references, and which addresses a problem which has not been addressed by the cited references.

Withdrawal of the rejection to claim 1 and its dependent claims is therefore respectfully requested. Withdrawal of the rejection to claim 8 and its dependent claims is similarly respectfully requested.

Regarding claim 6, the cited references similarly do not disclose or suggest that a cell selector selects a cell site before an antenna selector selects a receive antenna.

Paragraph 6 of the Office Action

Regarding paragraph 6 of the Office Action, claims 4 and 5 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Laborde in view of Hashikuki and "Applicant's disclosure of the prior art." Claims 4 and 5 are patentable at least by virtue of their dependence on claim 1.

New claims

Claim 13 sets forth details of a communications network in which an optoelectronic port receives signals from first and second receive antennas of a cell site via optical fibers (See, e.g., Fig. 4). Laborde instead provides a cable pair 42 which is coupled to multiple micro cells (Fig. 3) and does not disclose or suggest the claimed structure.

Claim 14 sets forth that an antenna selector selects a receive antenna by selecting a signal of a first and second optical receivers. Again, the cited references provide no disclosure or suggestion of the claimed features.

Claim 15 sets forth that an optical transmitter of an optoelectronic port is coupled to an O-to-E converter of a transmit antenna. Again, the cited references provide no disclosure or suggestion of the claimed features.

Claim 16 sets forth that an antenna selector selects one of the signals of multiple receive antennas and passes the selected signal to a cell selector. Again, the cited references do not perform antenna selection (micro-diversity) and cell selection (macro-diversity) as claimed and therefore do not select a receive antenna of multiple receive antennas of a cell site, and provide the selected signal to a cell selector which selects one of the cell sites.

Claim 17 sets forth a communication system such as provided in FIG. 3 in which, e.g., a first switching component 31 selects one of the first antenna receive signals P2, P3 and provides it to a controller (NIC2) 33, and a second switching component 30 selects one of the second antenna receive signals P2', P3' and provides it to the controller (NIC2) 33, and the controller 33 selects one of the signals provided to it.

Claims 18-20 are similarly patentable based on the above discussion.

Regarding claim 21, refer, e.g., to Fig. 4 and p.5, lines 26-28, which states that: "The NIC carries out both macro and micro diversity selection, with all of the signals received from all of the POPs capable of being presented to the selection system 47." Thus, the NIC (controller) 40 can select from among a set of RF signals which includes signals from first and second optical receivers of a first optoelectronic port and from first and second optical receivers of a second optoelectronic port. The claimed structure similarly is not disclosed or suggested by the cited references.

Conclusion

In view of the above, each of the presently pending claims is believed to be in condition for immediate allowance. The Examiner is therefore requested to pass this application on to an early issue. Should further questions remain, the Examiner is invited to contact the undersigned attorney by telephone.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 501826 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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